

is in the Herbarium of the Academy of Natural Sciences of Philadelphia.

ALLENTOWN, LEHIGH COUNTY, PENNSYLVANIA.

SHORTER NOTES

A WOODLAND PLANT THAT IS BECOMING A GRAINFIELD WEED

ALBERT A. HANSEN

It is rather an uncommon occurrence for woodland species to acquire the habit of invading field crops but this strange situation is presented by *Phacelia purshii* in Indiana.

The species is found in abundance in open woods in many parts of the state and botanists usually record the occurrence of the plant in "moist woods and thickets." During April, 1922, County Agent D. D. Ball of Rush County, Indiana, sent a specimen of *Phacelia purshii* for identification with the statement that, in one part of his county, "there are about 500 acres of clover and wheat infested by this plant, which is a serious pest. The wheat especially will not grow in patches infested by the weed."

A few days later another specimen of the same species was received from W. A. Crutz, manager of the Imperial Mills of Cambridge City, Indiana, with the statement that "this plant was brought into my place of business and is a new one in this locality. It is noted among farmers for its damage to wheat and oats. It grows best on sandy loam and on river bottomland. One farmer is now planning on mowing a field of oats that is so badly infested that the oats are being choked out by the weed."

The next report of the occurrence of this new weed came from County Agent A. J. Hesler of Fountain County, Indiana. He stated that the weed "has lavender flowers that bloom about May 30. It is a very bad weed, especially on the Hayes farm in this county where it is dominating a field of oats."

The identification was verified by the Office of Economic and Systematic Botany of the United States Department of Agriculture. Since the various reports suggest that the species is a potentially dangerous weed, a picture of the plant together with

a note of warning to farmers was published in "The Indiana Farmer's Guide" of June 2, 1923 and shortly afterwards another specimen was received from the farm of A. J. Bacon of Akron, Fulton County, Indiana. It is evident that *Phacelia purshii* is becoming established as a grainfield weed in central Indiana, an unusual habit for an erstwhile woodland species. Since the plant has no recognized common name, the generic part of the technical name is being used for this purpose since phacelia is a euphonious word that is easy to pronounce.

Plant ecologists may be interested in this common woodland species that is apparently developing into a serious pest in small grains and clover.

DIVISION OF BOTANY,
PURDUE UNIVERSITY AGRICULTURAL
EXPERIMENT STATION.

SOME BOTANIC GARDEN MATERIAL USEFUL IN HIGH SCHOOL WORK

R. C. BENEDICT

Mr. Boynton's report on species of *Kleinia* at a recent Torrey Club meeting suggests a comment on the availability of this genus as material for laboratory work in high school biology. For some years the writer has regularly made use of the fleshy stem of *Kleinia* to illustrate typical stem structure of a dicotyledonous plant. The ordinary *Kleinia* leafless stems are over one half inch in thickness. The bundle arrangement is a simple ring seen in cross section with a large pith and a definite cortex. Sectioned freehand with a razor the specimens are large enough to show their structure without the use even of a hand lens.

In the younger parts of the branches the bundles in cross section are distinctly separated but they early show the development of interfascicular cambiums. In older parts of the same stem the bundles have grown considerably both in a radial direction and through the differentiation of the inter-fascicular cambium. Scattered through the cortex are smaller bundles, mainly circular, the leaf traces. Sections of *Kleinia* (such species as *K. articulata* and *K. anteuophorbia*) are approximately the size of the ordinary prepared section of corn stem. If the *Kleinia* stem is placed in red ink a few hours before sectioning, the bundles will show the rise of this liquid very clearly.

VARIATION

In connection with advanced biology work the laboratory study of material illustrative of variation has been found useful. For the fluctuating variation the ordinary "yellow-eyed" bean of the seedsman furnishes material in which intergrading series showing variation in the size of the pigmented spot, of the depth of color of the spot, as well as of the total size of the bean, are easily discovered by the pupil. Material for mutation is easily obtainable in the form of some of the definite sports of the Boston fern series. The distinct differences of these bud variations are represented in separate pinnae and these latter furnish objects for representation by the pupil entirely within his ability to draw in a short time. A single laboratory lesson on variation may include both the fluctuation and the mutation types.

HABITATS

The topic of the adaptation of plants to different habitats always occupies a considerable place in high school biology, especially in the more advanced courses. Pupils of Stuyvesant High School to the number of 150 or more visit the Brooklyn Botanic Garden each term in connection with their term's work in plant study and, in groups of about 30, are shown the characteristics and adaptations of plants arranged under six habitat groups:—

- (1) Xerophytes.
- (2) Hydrophytes.
- (3) Epiphytes.
- (4) Insectivorous plants.
- (5) Parasites and saprophytes are also included in the discussion though the illustrative material for these latter is not usually available.

Further in connection with this field trip the attention of the pupils is called to characteristic examples, and general economic importance of six main groups of plants, broadly classified as phyla, viz.: bacteria, fungi, algae, mosses, ferns and seed plants. The special display of plants arranged to show the probable evolutionary development of the different types at the Brooklyn Botanic Garden, house No. 2, makes a particularly good station for a description of plant phyla.

In general the purpose of the trips is to show the city boys a considerable range of actual living, growing plants, and a Botanic Garden is a specially favorable place for such a trip.
NEW YORK CITY.

HIGH SCHOOL BIOLOGY AND THE NEW YORK BOTANICAL GARDEN

G. T. HASTINGS

The New York Botanical Garden is made use of by some of the schools at the Bronx and Manhattan in much the same way that the Brooklyn Garden serves Stuyvesant. Every term the biology classes of Morris and Evander Childs High Schools, and at times other city high schools, visit the garden. The pupils, often 600 or more, are taken through the greenhouses in groups of 25 or 30 led by members of the garden staff or teachers.

PLANTS OF COMMERCE

In addition to studying the habitat groups in the desert house and the others, various plants such as cacao, coffee, cocoanut, camphor, Manilla hemp, rubber, tea, etc., are marked with large labels and studied by the pupils. Later in the museum the products of the same plants are seen and the methods of preparation studied. The classes conclude their visits with illustrated lectures in the large hall of the museum.

VARIATION UNDER CULTIVATION

Pupils of botany classes also visit the garden every term, especially in the spring to see the display of tulips and in the fall the dahlias. The hundreds of varieties of these plants make a splendid illustration of the way plants vary and of what may be done by selection.

PUBLIC LECTURES

Many pupils visit the garden individually or in small groups, often to get material for class reports. Some of the pupils also attend Saturday lectures. The biology classes of St. Ursula's regularly attend these and reports on the lectures are a required part of the class work.

City biology teachers often feel that they are handicapped by the surroundings under which their pupils live, but the city

museums and botanic gardens offer much to compensate for the lack of things that surround the country pupils.

NEW YORK CITY.

PROCEEDINGS OF THE CLUB

MEETING OF APRIL 25, 1923

The meeting of the above date was held in the Museum of the New York Botanical Garden.

The following were elected to membership:

John M. G. Emery, Garden City, N. Y.

Prof. Will S. Monroe, Montclair, N. J.

Rafael A. Toro, Insular Experiment Station, Rio Piedras, Porto Rico.

The first paper on the scientific program was by Mr. J. A. Faris on "The Black Stem Rust of Wheat and the Common Barberry in the United States." An abstract by the speaker follows:

The increasing losses during recent years due to the black stem rust (*Puccinia graminis*) of small grains throughout the north central grain-growing states led the United States Department of Agriculture to make a survey to determine the presence of the common barberry throughout this region. Studies were also made to determine what part the barberry was taking in the spread of stem rust to the wild grasses and neighboring grain fields.

This preliminary survey revealed the wide-spread occurrence of barberry throughout the entire region and bushes were found to be rusted in April and May. The rust spread from the infected bushes directly to the wild quack grasses, wild barley, etc., and to neighboring grainfields several weeks before rust appeared upon grainfields considerable distances from infected barberry.

In order to prevent this early spread of the rust and to eliminate several million centres of infection, a campaign to eradicate species of *Berberis* and *Mahonia* susceptible to the stem rust was begun in 1918. This campaign is now being vigorously carried on by both the United States Department of Agriculture and the individual states in the eradication area. All the states have passed laws requiring the eradication of these barberry bushes.